Chapter 10

Text Pages 270–271

ACTIVITY 10-1

Locating Active Volcanoes

Design Your Own Experiment

Lab Preview

What are lines of latitude and longitude? _____

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You have learned that all volcanoes form when hot, melted rock material is forced upward to Earth's surface. How might scientists use this and other knowledge of volcanic activity to predict earthquakes?

PREPARATION

Problem

Is there a correlation between the locations of active volcanoes and the locations of epicenters?

Form a Hypothesis

State a hypothesis about whether you expect to see a correlation between the locations of active volcanoes and the locations of earthquake epicenters.

Objectives

- Plot the locations of several active volcanoes.
- Describe any correlation you see between locations of volcanoes and locations of earthquake epicenters.

Possible Materials

- Appendix G
- tracing paper
- Figure 9-2, page 237
- Figure 10-3, page 268

Data and Observations

Volcano	Latitude	Longitude	Volcano	Latitude	Longitude
#1	64° N	19° W	#11	15° N	43° E
#2	28° N	34° E	#12	6° N	75° W
#3	43° S	172° E	#13	64° S	158° E
#4	35° N	136° E	#14	38° S	78° E
#5	18° S	68° W	#15	21° S	56° E
#6	25° S	114° W	#16	38° N	26° E
#7	20° N	155° W	#17	7° S	13° W
#8	54° N	167° W	#18	2° S	102° E
#9	16° N	122° E	#19	38° N	30° W
#10	28° N	17° W	#20	54° N	159° E

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Activity (continued)

Plan the Experiment

1. As a group, agree upon and write out your hypothesis statement.
2. As a group, list the steps that are needed to test your hypothesis. Be specific, describing exactly what you will do at each step.
3. Determine how best to plot the provided volcano latitude and longitude data on a tracing of Earth's surface.
4. Make a list of any special conditions or facts you expect to observe or test.

Check the Plan

1. Read over your experiment to make sure that all steps are in a logical order.
2. Determine the manner in which you will summarize data and state conclusions about any correlations you discover.
3. How will you determine whether certain facts or conditions will indicate a correlation of volcano locations with locations of earthquake epicenters?
4. *Make sure your teacher approves your plan and that you have included any changes suggested in the plan.*

Do the Experiment

1. Carry out the experiment as planned.
2. While conducting the experiment, write down any observations that you make in your Science Journal.
3. Compare the plot of volcanoes you have constructed with Figures 9-2 and 10-3 and pages 237 and 268.

Analyze and Apply

1. **Describe** any patterns of distribution that active volcanoes form on Earth. _____

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2. **Describe** any patterns of distribution of earthquake epicenters shown in Figure 9-2 on page 237.

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3. **Compare and contrast** any patterns that you observe with the locations of Earth's plates and hot spots. _____

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Go Further

Write a hypothesis to explain any patterns you observed for locations of volcanoes, earthquake epicenters, Earth's moving plate boundaries, and hot spots. Propose ways in which geologists might test your hypothesis.

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